

Amendments

In the Claims:

What is claimed is:

- [c1] (Currently Amended) An apparatus for monitoring a meter, comprising:
a meter that monitors usage of a distribution system;
an electronic data recorder that processes data from the meter;
an external unit that controls the processing of data in the electronic data recorder with a communication protocol; and
where the communication protocol comprises,
an initialization signal,
an interval identification signal that identifies a present reading cycle for the data from the meter with a unique signal width of the interval identification signal, where the unique signal width comprises a multiple of a signal cycle width, and
a clock signal.
- [c2] (Original) The apparatus of claim 1, where the meter is a utility meter.
- [c3] (Original) The apparatus of claim 2, where the utility meter is a water meter.
- [c4] (Original) The apparatus of claim 3, where the water meter is self-powered.
- [c5] (Original) The apparatus of claim 4, where the water meter is power by a Wiegand Wire.
- [c6] (Original) The apparatus of claim 5, where the Wiegand Wire powers the electronic data recorder.
- [c7] (Original) The apparatus of claim 1, where the external unit is a meter interface unit.

- [c8] (Original) The apparatus of claim 1, where the initialization signal is between 25 and 100 milliseconds in duration.
- [c9] (Original) The apparatus of claim 1, where the clock signal operates at a frequency of 1200 hertz.
- [c10] (Original) The apparatus of claim 1, where the clock signal operates at a frequency of 19.2 kilohertz.
- [c11] (Original) The apparatus of claim 1, where the electronic data recorder is activated on 15 minute intervals by the communications protocol.
- [c12] (Original) The apparatus of claim 11, where the interval identification signal identifies each 15 minute interval in a one hour time period.
- [c13] (Original) The apparatus of claim 1, where the electronic data recorder processes data from the meter to detect a leak in the distribution system.
- [c14] (Original) The apparatus of claim 13, where the leak is continuous.
- [c15] (Original) The apparatus of claim 13, where the leak is intermittent.
- [c16] (Original) The apparatus of claim 13, where the electronic data recorder further processes data from the meter to determine how long the leak has been present.
- [c17] (Original) The apparatus of claim 1, where the electronic data recorder processes data from the meter to determine a flowrate in the distribution system.
- [c18] (Previously Presented) The apparatus of claim 1, where the electronic data recorder processes data from the meter to determine the direction of a flow in the distribution system.

- [c19] (Previously Presented) The apparatus of claim 1, where the electronic data recorder processes data from the meter to detect an absence of a flow in the distribution system.
- [c20] (Presently Amended) An apparatus for monitoring a meter, comprising:
- a meter that monitors usage of a distribution system;
 - an electronic data recorder that processes data from the meter to detect an absence of a flow in the distribution system and determine how long the flow has been absent;
 - an external unit that controls the processing of data in the electronic data recorder with a communication protocol; and
 - where the communication protocol comprises,
 - an initialization signal,
 - an interval identification signal, and
 - a clock signal.
- [c21] (Original) The apparatus of claim 1, where the electronic data recorder processes data from the meter to detect backflow in the distribution system.
- [c22] (Original) The apparatus of claim 21, where the backflow is continuous.
- [c23] (Currently Amended) An apparatus for monitoring meter usage, comprising:
- a meter that monitors usage of a distribution system;
 - means for receiving data from the meter;
 - means for processing data from the meter, where the means for processing data from the meter is controlled by an external unit with a communication protocol that comprises,
 - an initialization signal,
 - an interval identification signal that identifies a present reading cycle for the data from the meter with a unique signal width

of the interval identification signal, where the unique signal width comprises a multiple of a signal cycle width, and
a clock signal; and
means for detecting a leak in the distribution system.

[c24] (Original) The apparatus of claim 23, further comprising:
means for determining a flowrate in the distribution system.

[c25] (Previously Presented) The apparatus of claim 23, further comprising:
means for determining the direction of a flow in the distribution system.

[c26] (Original) The apparatus of claim 23, further comprising:
means for detecting an absence of a flow in the distribution system.

[c27] (Original) The apparatus of claim 23, further comprising:
means for detecting a backflow in the distribution system.

[c28] (Currently Amended) A method for calculating utility usage patterns, comprising:
receiving usage data from a meter that monitors usage of a distribution system;
processing the usage data to calculate utility usage patterns, where the step for processing the usage data is controlled by an external unit with a communication protocol that comprises,
an initialization signal,
an interval identification signal that identifies a present reading cycle for the usage data with a unique signal width of the interval identification signal, where the unique signal width comprises a multiple of a signal cycle width, and
a clock signal; and

where the utility usage patterns identify predefined conditions in the distribution system.

- [c29] (Original) The method of claim 28, where the predefined conditions are indicated in levels of magnitude.
- [c30] (Original) The method of claim 29, where the predefined conditions are indicated in at least 3 levels of magnitude.
- [c31] (Original) The method of claim 28, where the utility usage patterns are determined on a moving time scale.
- [c32] (Original) The method of claim 28, where the predefined conditions comprise a leak in the distribution system.
- [c33] (Original) The method of claim 28, where the predefined conditions comprise a flowrate in the distribution system.
- [c34] (Previously Presented) The method of claim 28, where the predefined conditions comprise the direction of a flow in the distribution system.
- [c35] (Original) The method of claim 28, where the predefined conditions comprise an absence of a flow in the distribution system.
- [c36] (Original) The method of claim 28, where the predefined conditions comprise a backflow in the distribution system.
- [c37] (Original) The method of claim 28, where the meter is a water meter.
- [c38] (Original) The method of claim 37, where the water meter is self-powered.
- [c39] (Original) The method of claim 38, where the water meter is powered by a Wiegand Wire.

[c40] (Currently Amended) A method for calculating utility usage patterns, comprising:

step for receiving usage data of a distribution system;

step for processing the usage data to calculate utility usage patterns, where the step for processing the usage data is controlled by an external unit with a communication protocol that comprises,

an initialization signal,

an interval identification signal that identifies a present reading cycle for the usage data with a unique signal width of the interval identification signal, where the unique signal width comprises a multiple of a signal cycle width, and

a clock signal; and

step for identifying predefined conditions in the distribution system based on the utility usage patterns.